Recommended VRS Reforms

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Definitions

Throughout this paper we will adhere to two working definitions so that there is a clear distinction between two classes of VRS endpoints.

“Videophones”

This refers to proprietary videophones distributed by VRS providers for the purpose of enabling VRS access. These videophones are hardware and contain firmware that allow for customized features and other back-end functionalities such as authentication of VRS users and automatic retrieval of VRS user data.

Sorenson® VP100®

Sorenson® VP200®

OjO

“VRS software”

This refers to software distributed by VRS providers that are developed for the purpose of VRS access and can be downloaded onto devices such as desktop computers, personal computers, tablets, and smartphones. VRS software is used in conjunction with an external or built-in web camera and utilizes Internet or cellular connection.

Convo Mobile™

Sorenson® ntouch™ PC

Z4™

Introduction

In generations past, deaf people relied on the willingness of their family members and the generosity of their neighbors to make phone calls on their behalf. This often meant a deaf person, when too sick to work, would nonetheless get out of bed to visit a neighbor with a note asking him or her to call and inform their employer.

The passage of the Americans with Disabilities Act of 1990 changed this by ensuring telephone accommodation for all deaf people in civics and commerce. Title IV of this seminal legislation mandated access to telephone systems in every state, which came to be known as telecommunications relay services ("TRS"). In 2002 the FCC furthered this by recognizing video-based relay services as a legitimate form of TRS, and created Video Relay Services ("VRS") as we know it today.

In the years since, improved video technology and broadband penetration have contributed to lower costs and greater levels of quality, making VRS progressively more viable and accessible. Today a significant number of TRS consumers use VRS on a daily basis on their computers, standalone videophones, set-top devices hooked up to TV sets and smartphones.

However, newer technologies and evolving economic realities necessitate policy updates that will ensure that TRS consumers maintain access apace with functional equivalency, and just as important, that the FCC regulate TRS providers in a manner that best incentivize provider integrity, efficiency and innovation.

In this document we propose the following three changes to the existing TRS regulations and infrastructure:

1) Institute an "access fee" for videophone providers if their videophones are used to facilitate calls through other VRS providers;

2) Establish a nationwide voucher program for devices with which to use VRS software so that marginalized potential VRS users can finally access VRS; and

3) Implement a centralized server or servers for VRS user authentication and user data

All three proposals are oriented around the VRS consumer and are thus intended to achieve greater realization of functional equivalency. In the following sections we discuss each in greater detail.

Proposal #1: TRS Access Fee

While steps have been taken to separate proprietary videophones from VRS, today the two are still locked together.

In a declaratory ruling released on May 9, 2006, the FCC ordered that any provider that blocked calls to competing VRS providers would not be eligible to receive compensation from the Interstate TRS Fund. The Declaratory Ruling stated that “all VRS customers should be able to place a VRS call through any of the VRS providers’ service, and all VRS providers should be able to receive calls from, and make calls to, any VRS customer.”

However, the Declaratory Ruling did not do enough to separate videophones from services. Videophone users were free to “place a VRS call through any of the VRS providers’ service,” but in a limited manner, because while they could manually dial the number of other VRS providers in order to use their service, they still could not change which provider to receive calls through.

This limitation meant that incoming calls to the videophone defaulted to the provider that owned the videophone - not to any other provider that the user might wish to use instead. This is contrary to language in the FCC’s declaratory ruling: “all VRS providers should be able to... make calls to any VRS customer.”

To fully realize the separation of videophones from services, users must be able to fully control, on any videophone, their default provider, which would thereafter be used for both incoming and outgoing calls. This control is also known as videophone portability.

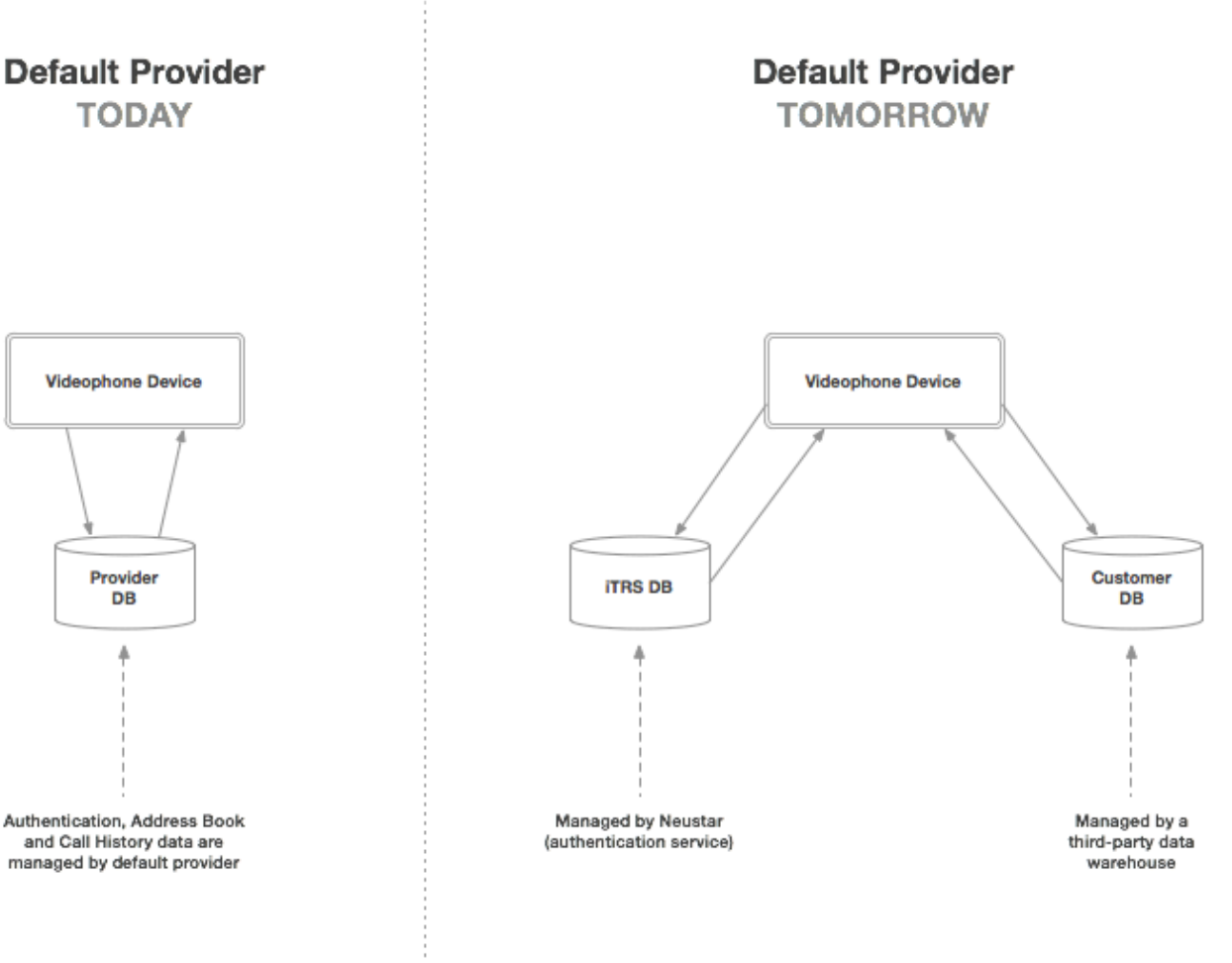
Recommendation

A major barrier to realizing separation of videophones from services is this: providers that carry videophones have stated that if they are forced to allow users to choose a different default VRS provider, either for outgoing or incoming calls, then the incentive to develop new videophones, or to innovate and offer additional features to benefit customers, would be severely diminished.

Convo believes the best solution is for the FCC to establish a centralized authentication server that would maintain all VRS user accounts, as opposed to the current system in which each videophone *is* a single user account.

A centralized authentication server would allow users to maintain a single user account per physical location, not per videophone or VRS software. In other words, users would have one username and one password, and correspondingly, one phone number - per physical location, regardless of how many videophones or installed VRS software they may have at that physical location. Further, users would also be able to centrally change their preferred default provider, rather than make that change on each videophone or VRS software they have installed.

After the establishment of a centralized authentication server, two things should then follow. The first is the institution of an “access fee” to reimburse VRS providers if their proprietary videophones are used through other providers. The second is to centralize some basic features to ensure continuity as users choose different providers to use with their videophones, or as they log in to VRS software.



Any change in the default provider of a videophone must and should be accompanied by the preservation of basic features such as the address book, call history, and so forth (and will be later discussed in the API section). The preservation of those basic features is a key component in separating videophones from services, but also provides benefits users of VRS software. This provides for a functionally equivalent telephone experience, but does not stifle the ability of providers to introduce additional and improved features and capabilities.

Sorenson Communications, over several filings to CG Dockets 98-67 and 03-123, proposed financial incentives for opening up their dominant VRS platform. In its May 2, 2005 filing, Sorenson suggested as one possibility that "VRS providers placing calls for users of another VRS provider could reimburse that provider a portion of the amount received by the TRS Fund for each such call. Under this program, if Sorenson, for example, placed a call for a Hamilton user, Sorenson would pay Hamilton a portion of the money received from the TRS Fund for placing that call. Both providers would then recover their investments into production of videophones and services (page 17)."

While Sorenson's filings did not refer to the ability to set an alternate default provider on their videophones, we believe that a similar model could be used to achieve the separation of videophones from services.

First, the FCC would need institute a data gathering system to determine the amount of minutes a particular provider's videophone is used with competing providers. This could be accomplished by mandating that all providers, in their monthly reports, show the type of videophones used during the provision of each VRS call (for example, VP100, VP200, Z-Ojo, Z150, Z340, SnapVRS Ojo, VPAD and MVP).

Second, if a user of one type of videophone makes or receives calls using a provider other than that which owns the videophone - for instance, a Sorenson VP-200 user using Purple VRS - then the owner of the videophone - Sorenson in this example - would be reimbursed a portion of the per-minute rate (currently $6.24 for Tier I, $6.23 for Tier II, and $5.07 for Tier III) and the provider that handled the call would receive the remainder of the rate.

We propose the following formula in determining how much to reimburse the owner of the videophone. First, the following factors are considered:

a) Cost of the videophone, minus any contribution by the user to the videophone's cost
b) Cost of installing the videophone at the user's location
c) Useful anticipated lifetime of the videophone

d) Monthly videophone cost - assuming 9% interest

e) Maintenance provision of 3.5%

f) Assumed monthly usage (in minutes) of the videophone

Using the above factors, we can determine how much per minute to reimburse the owner of the videophone, with the following formula:

Cost of videophone	**$250.00**	
Cost of installation	**$50.00**	
Total cost of videophone for one user, per month	*$7.97*	*Includes lease payment (9%) and maintenance provision (3.5%)*
Total cost of videophone for one user for 4 years	*382.56*	
Total cost of videophone for one user, per minute	*$0.234*	*Based on average usage of 34 minutes per month*

The above does NOT take into account the amount the user pays for the device, if anything.

The cost of the videophone for one user, per minute - in this example, $0.234 - would go to the owner of the videophone to help recoup their investment in the videophone in exchange for allowing the videophone to be used by any VRS service. Separating videophones from services can be accomplished very effectively in this manner.

Reimbursement would be allocated, using the example above, as follows:

a) **$6.24** reimbursement rate (Tier I reimbursement rate assumed, as of February, 2011)

b) **$6.01**, to be paid to the VRS company providing service ($6.24 - $0.23)

c) **$0.23**, to be paid to the owner of the videophone

Technology Requirements to Implement the Separation of Videophones from Services

Reimbursing the owner of the videophone when their videophone is used with other providers is only part of the solution. To fully realize the separation of videophones from services, the following would need to happen:

a) Users must be able to, at will, change the default VRS provider for each of their user accounts

b) A secure centralized server would need to be established to centrally store users' address books, and call histories

c) A centralized authentication server, such as the the iTRS database, would need to centrally administer VRS user accounts to provide for the ability of a user to, with one username and password, log in to any default provider's videophone and/or service

An Application Programming Interface (API), would be used industry-wide to separate videophones from services, and to access the expanded features of the iTRS database. Please refer to the API section for further information on our proposed API.

Proposal #2: Expanding VRS Access

In the United States, approximately 200,000 individuals use VRS. However, that number does not line up with the estimated total population of deaf, hard of hearing, and speech disabled individuals, which leads us to believe that there are many underserved individuals.

We believe there are four main barriers preventing potential users from accessing VRS at home: (1) they do not have VRS equipment, (2) they do not know how to use their VRS equipment, (3) broadband Internet access is not available to them, (4) or they cannot afford broadband Internet access.

Recommendations

1. Lack of VRS equipment

There are several reasons why an American Sign Language ("ASL") user may not have VRS equipment at home - defined as a device with a Web camera and Internet connection that is capable of being used with VRS software. For instance, they may not have access to, or may not be able to afford, broadband Internet access at home and consequently do not bother acquiring VRS equipment. In other cases, they may not have heard of VRS or understand how to use VRS.

Possible solutions:

- *Project Endeavor*
- *State TED voucher programs*

Project Endeavor

On July 19, 2010, the National Telecommunications and Information Administration ("NTIA") awarded a $14.9 million, two-year grant to South Dakota-based Communication Services for the Deaf to increase the adoption of broadband among the deaf and hard of hearing. Called Project Endeavor, the program seeks out those without broadband and provides them with one year of free mobile 4G broadband access and a netbook computer. In addition, Project Endeavor provides training, if necessary, to teach individuals how to use their netbook computer.

The netbooks being given out by Project Endeavor have built-in Web cameras, qualifying them as VRS equipment. As such, Project Endeavor is an example of how to bring VRS to those who cannot afford broadband access.

However, our concern with Project Endeavor is that there is no allowance for customer choice. Project Endeavor does not allow recipients to choose between Mac notebook computers, PC notebook computers, netbooks, Android tablets, iPad tablets, or mobile devices with front-facing Web cameras. Convo believes that any solution adopted by the FCC should fully encourage customer choice.

State telecommunications equipment distribution ("TED") programs

With Telecommunications Relay Services ("TRS"), many states have historically subsidized the cost of devices that deaf people use for text relay, such as TTYs. Over the life of the TRS program, those states have accumulated 20 years of data on relay users living within their borders, making state TED programs a wealth of information on potentially underserved users.

When the California Public Utilities Commission ("CPUC") ordered California's Deaf and Disabled Telecommunications Program ("DDTP") to conduct a low-income wireless equipment distribution program for California residents, the goal was to identify users without high-speed broadband Internet access and provide them with wireless Internet access.

In 2007, wireless Internet access was still in its early stages, but DDTP received a staggering amount of responses from their mass mailing campaign. Approximately 2,000 deaf and hard of hearing individuals applied to participate in the wireless equipment distribution program, indicating that most, if not all of them, lacked broadband Internet access at the time.

Currently, there are between 32 and 37 states with active TED programs. Some states determine eligibility for TED program participation on the basis of income, residency and disability while other states decline to factor in income. Some states administer the TED program themselves while others choose vendors to operate the program.

Convo believes that state TED programs can be expanded from covering a limited range of devices such as TTYs and assistive devices, to covering notebook computers, netbooks, tablets, and mobile devices with built-in Web cameras. Convo further believes

that, ideally, state TED programs should distribute vouchers, on an income-dependent basis, so that deaf and hard of hearing persons can choose for themselves which device best fits their needs.

For states that choose to purchase and then distribute VRS equipment themselves, expensive warehouse storing costs are required to maintain stocks for distribution. With an abundance of devices in the marketplace that qualify as VRS equipment, vouchers are a way of increasing the number of users with VRS equipment, while fully encouraging customer choice.

Convo believes that the FCC should coordinate such a voucher program, and contract with state TEDs to carry out its goals. Where state TED programs are not available, the FCC should select a vendor to administer a voucher program.

Examples of devices that may be eligible for vouchers

We believe it is important to limit the use of vouchers to commercially available devices that can be used with any VRS provider. Commercially available devices subject to an exclusivity agreement with a VRS provider, for instance, should be ineligible for purchase with vouchers.

The following table lists devices that potentially qualify as VRS equipment, meaning they have a built-in Web camera and can be used with VRS software. Ideally, individuals would be able to test several devices before determining which one best fits their needs.

Acer Iconia	HTC Flyer	MSI WindPad
Apple iPad 2.0	Lenovo IdeaPad	Notion Ink Adam
Archos 10	Lenovo LePad	PC Netbook
Asus EEE Pad	LG G-Slate	PC Notebook
Dell Streak 7/10	LG Optimus Pad	Samsung Galaxy Tab
ExoPC	Mac Notebook	Toshiba Folio 10/100
HP Slate 500	Motorola Xoom	ViewSonic ViewPad 7/10

The devices listed above are offered at differing price-points. One method for establishing the maximum value of a voucher could be to assemble a list of eligible

devices such as the above, find the median or mean price (whichever is higher) and use that price as the maximum value of the voucher. If an individual chooses a product that costs less than the value of the voucher, that individual should not be allowed to get a cash refund and instead should forfeit the voucher's remaining value.

To save costs, voucher values should further depend on the income of the individuals receiving them. For example, an individual who is below the poverty line might receive the full value of the voucher, while someone above the poverty line might get a voucher of decreased value.

2. Insufficient knowledge of how to use VRS equipment

In some cases, VRS users lack knowledge of how to use their VRS equipment. To maximize the return on investment with Project Endeavor or state TED programs, funds need to be made available to teach users how to use their devices.

We believe that there is no right or wrong answer to solving this problem, as differing approaches can be successful. One option would be to distribute training materials in ASL that would cover basic how-to's and to restrict costly human trainers fluent in ASL for more advanced training upon request.

3. Lack of broadband Internet access

"Lack of" broadband Internet access falls under two categories: 1) the availability of Internet access, but at speeds below that which qualifies as broadband; and 2) a complete lack of Internet access.

Possible solutions:

- *Project Endeavor*
- *Mandated broadband (4MBPS/1MBPS) plans from all ISPs for the VRS user population*

To use VRS with a reasonable expectation of quality, a user must have Internet access speeds that meet the broadband threshold. The FCC defines broadband as a minimum of 4MBPS download and 1MBPS upload speeds.

According to the FCC in its Sixth Broadband Deployment Report, released July 20, 2010, approximately 80 million Americans do not use broadband at home, and between 14 to 24 million Americans do not even have broadband access.

However, there is no such flexibility among ISPs in the United States to provide the deaf and hard of hearing with a broadband plan that has enough speed to use VRS with a reasonable expectation of quality. So, even in instances where the deaf and hard of hearing have broadband available to them, they may be forced to purchase a more expensive plan to acquire the broadband speeds necessary for VRS or to forego VRS altogether given that the video quality allowed by the cheaper plan may not allow for adequate legibility of ASL.

The FCC should examine the possibility of requiring ISPs to offer 4MBPS/1MBPS plans for users who are deaf, hard of hearing and speech disabled so that they can use VRS with a reasonable expectation of quality.

The complete lack of broadband access for many who would like to use VRS is best addressed through the FCC's National Broadband Plan. However, in some instances, wireless broadband access is available where wired broadband access is not. Project Endeavor, by giving out free one-year 4G internet access to eligible individuals, fills this need.

4. Inability to afford broadband Internet access

According to Ookla, a company that provides Web-based network testing applications and whose clients include nearly every major ISP in the United States, the average American pays $47.32 for broadband every month.

Possible solutions:

- *Project Endeavor*
- *Lifeline/Lifelink*

Because up to 60 percent of deaf and hard of hearing Americans are unemployed according to the National Technical Institute for the Deaf at Rochester Institute of Technology, the monthly cost of broadband may be prohibitive for those who need it most.

An FCC-mandated 4MBPS/1MBPS Internet plan for those who are deaf, hard of hearing and speech disabled could bring the cost of broadband Internet access within reach for many. By way of example, major wireless carriers such as AT&T and Sprint accommodate their deaf and hard of hearing customers by offering data-only plans that are significantly discounted from ordinary wireless plans that include voice access.

Project Endeavor

For others, a program such as Project Endeavor, which provides one year of free broadband Internet access for qualified individuals, would fill a void. However, there would be a need for alternate programs to step in after the first year because Project Endeavor ceases covering those individuals' Internet costs after the first year.

Lifeline and Lifelink programs

The FCC currently administers the Lifeline and Lifelink programs, which are funded through the Universal Service Fund ("USF"). Using the example of those programs, the FCC can make funds available through USF to subsidize the cost of broadband for income-eligible users, as well as the cost of a device possessing a Web camera and Internet connection, with which to access VRS - such as notebook computers, tablets, and mobile devices with built-in Web cameras. Because broadband is the means through which VRS users access telecommunication services, the USF is an ideal vehicle.

We believe that the Lifeline and Lifelink programs are the ideal vehicle by which to bring broadband Internet access to those who cannot afford it on their own.

Proposal #3: Centralized TRS API

A centralized Application Programming Interface ("API") solves two major issues. The first issue - runaway phone numbers - means that by default VRS users have one number assigned per videophone and per VRS software. The second problem is that of videophone portability - the ability to set a new default provider on the videophone they use.

- The first issue - runaway phone numbers - means that by default VRS users have one number assigned per videophone and per installed VRS software. This leads to users experiencing problems remembering all their numbers. The inability to share one number amongst different videophones or or installed VRS software at a user's home can also cause issues when a user misses an incoming phone call because they were not near the videophone or devices containing the installed VRS software associated with the phone number.

- The second issue - videophone portability - relates to proprietary videophones; users currently face a situation where they cannot choose to use a default provider other than that which owns the videophone.

This issue does not relate to VRS software. This is because software developed by multiple providers can be installed on the same device (for instance, Mac notebook computers, PC notebook computers, netbooks, Android tablets, iPad tablets, or mobile devices with front-facing Web cameras).

Recommendation

We propose the implementation of a centralized authentication server, which would address the two listed issues while allowing VRS users to experience functional equivalency.

A centralized authentication server, such as the iTRS database, would allow users to maintain a single user account per physical location, not per videophone or or installed VRS software. In other words, users would have one username and one password, and correspondingly, one phone number - per physical location, regardless of how many videophones or VRS software they may have at that physical location. Further, users would also be able to centrally change their preferred default for their videophones than make that change on each videophone that they possess.

Second, by storing customer data - their address book and their call history - on a secure centralized server, a user can share the same username, password, and phone number amongst the videophones and installed VRS software at a particular address without losing their address book or call history. This provides for a functionally equivalent telephone experience, but does not stifle the ability of providers to introduce additional and improved features and capabilities.

This would be an API as follows:

1.0 Proposed API

HTTP requests using either GET or POST are the recommended mechanism for placing API requests. The basic CRUD operations (*create*, *read*, *update*, *delete*) should be the four actions for each feature (i.e. call history, address book).

The response generated by the HTTP server should be either in JSON or XML format, depending on the request's action. http://api.trs.com/call_history/create.js should return a JSON response. http://api.trs.com/call_history/create.xml should return a XML response.

** Refer to Appendix A for requested and response examples.*

2.0 Method and Actions

Each of the *methods* (i.e. call history, address book) listed below contain CRUD *actions*.

2.1 Authentication Service

The credential data could be stored within the iTRS database using some kind of agreed-upon encryption standard such as MD5. The password field could be a new additional field alongside other current fields (i.e. phone number, endpoint address).

~~`authentication/create`~~ (create mechanism limited to iTRS personnel)
`authentication/read`
`auth/update`
~~`address_book/delete`~~ (delete mechanism limited to iTRS personnel)

User Authentication
To access user-specific data, the user_name and user_password parameters must be part of the HTTP request.
Required Parameters - user_name - user_password* *user_password indicates the use of an industry-standard authentication scheme, such as MD5

2.2 Default Provider

The default provider should be part of the iTRS records. Whatever the default provider is, the dialed phone number (non-deaf number) should pass through the selected provider's destination address (i.e. acmevrs.tv).

2.3 Address Book and its associated contacts *

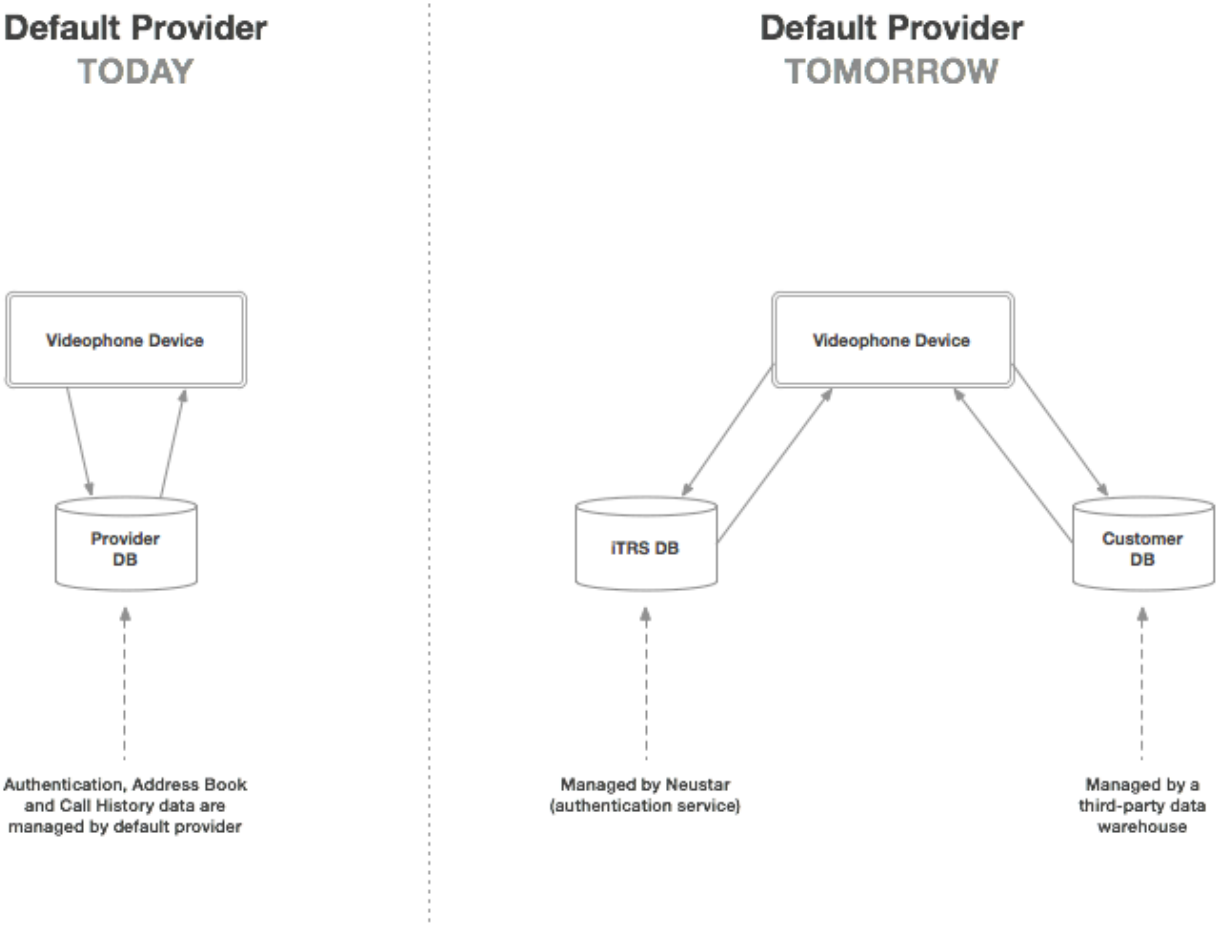
```
address_book/create
address_book/read
address_book/update
address_book/delete

contact/create
contact/read
contact/update
contact/delete
```

2.4 Call History *

```
call_history/create
call_history/read
~~call_history/update~~  (update mechanism should never be allowed)
call_history/delete
```

** Refer to Appendix B (Proposed Schemas).*

3.0 Illustrating HTTP Request and Response Examples using Call History



About Convo

Convo Communications is deaf-owned and provides 24/7 video relay services, which allow phone conversations to and from sign language users living in a global economy. www.convorelay.com

Organic, natural VRS

Convo strives to provide a "natural VRS" experience, with the conversation flowing as if you were having a direct conversation with the person you are calling, completely free of technology and interpreter snags.

Convo pledges to run its business ethically and to not pump its bottom line with calls that are intended only to create revenue. To this end, Convo handles only organic calls -- that is, VRS calls that are legitimate.

Some Facts About Us

Headquarters	San Ramon, CA
Locations	Bay Area, CA; Sacramento, CA; Austin, TX; New York, NY; Seattle, WA; Mobile, AL
Partners	SignOn Sign Language Services
Products	Convo Anywhere, Green Book, ConvoIM
Incorporation	Limited Liability Company
Convo is	• 100% deaf-owned • Open 24/7 year-round • Privately owned and without funding from equity groups • With employees, for whom 95% actively use sign language • Among the top five largest VRS providers

March 2009, Convo is born

Mar 2009	Convo founded
May 2009	Launches relay service
Aug 2009	Launches ConvoIM
Jan 2010	Opens Seattle call center in partnership with Sign On Language Services
Feb 2010	Moves HQ to San Ramon, CA Launches Convo Green Book Opens San Ramon call center
Apr 2010	Opens Mobile, AL call center
Jul 2010	Opens Roseville call center
Oct 2010	Launches Convo Anywhere
Oct 2010	Revamps website

APPENDIX A

Examples of HTTP Requests and XML/JSON Responses

`call_history/create`

Create a new call history record.

Required Parameters

- phone_number
- called_at
- is_inbound
- is_missed

Request Example

http://api.trs.com/call_history/create.js?phone_number=555-123-4567&called_at=2011-01-01T12:00:00-0500&is_inbound=true&is_missed=true&user_name=mickeymouse&user_password=g9h8i7j

JSON Response Example

```
{call_history:{id:1,phone_number:
555-123-4567,is_inbound:true,is_missed:true,called_at:
2011-01-01T12:00:00-0500}}
```

XML Response Example

```
<call_history>
  <id>1</id>
  <phone_number>555-123-4567</phone_number>
  <is_inbound>true</is_inbound>
  <is_missed>true</is_missed>
  <called_at>2011-01-01T12:00:00-0500</called_at>
<call_history>
```

`call_history/read`

Retrieve list of user's call history.

Supplying only the optional id parameter should retrieve a single record. Otherwise, it should retrieve an array of records.

Optional Parameters

- id

Request Example *(with id parameter supplied)*

```
http://api.trs.com/call_history/read.js?
id=1&user_name=mickeymouse&user_password=g9h8i7j
```

JSON Response Example

```
{call_history:{id:1,phone_number:
555-123-4567,is_inbound:true,is_missed:true,called_at:
2011-01-01T12:00:00-0500}}
```

XML Response Example

```
<call_history>
  <id>1</id>
  <phone_number>555-123-4567</phone_number>
  <is_inbound>true</is_inbound>
  <is_missed>true</is_missed>
  <called_at>2011-01-01T12:00:00-0500</called_at>
<call_history>
```

Request Example *(**without** id parameter supplied)*

```
http://api.trs.com/call_history/read.js?
user_name=mickeymouse&user_password=g9h8i7j
```

JSON Response Example

```
{call_histories:{call_history:{id:1,phone_number:
555-123-4567,is_inbound:true,is_missed:true,called_at:
2011-01-01T12:00:00-0500}},{call_history:{id:2,phone_number:
555-100-2000,is_inbound:false,is_missed:false,called_at:
2011-01-01T12:00:00-0500}}}
```

XML Response Example

```
<call_histories>
  <call_history>
    <id>1</id>
    <phone_number>555-123-4567</phone_number>
    <is_inbound>true</is_inbound>
    <is_missed>true</is_missed>
    <called_at>2011-01-01T12:00:00-0500</called_at>
  <call_history>
 <call_history>
    <id>2</id>
    <phone_number>555-100-2000</phone_number>
    <is_inbound>false</is_inbound>
    <is_missed>false</is_missed>
    <called_at>2011-01-01T12:00:00-0500</called_at>
  <call_history>
</call_histories>
```

`call_history/update`

Update a specific call history record.

WARNING: An update mechanism should NEVER be allowed for *call_history* but this is just an example of how an update would work if allowed.

Required Parameters

- id

Optional Parameters

- phone_number
- is_inbound
- is_missed
- called_at

Request Example

```
http://api.trs.com/call_history/update.js?
id=1&phone_number=555-555-5555&user_name=mickeymouse&user_password=g
9h8i7j
```

JSON Response Example

```
{call_history:{id:1,phone_number:
555-555-5555,is_inbound:true,is_missed:true,called_at:
2011-01-01T12:00:00-0500}}
```

XML Response Example

```
<call_history>
  <id>1</id>
  <phone_number>555-555-5555</phone_number>
  <is_inbound>true</is_inbound>
  <is_missed>true</is_missed>
  <called_at>2011-01-01T12:00:00-0500</called_at>
<call_history>
```

`call_history/delete`

Delete a call history record from the database.

Required Parameters

- id

Request Example

```
http://api.trs.com/call_history/delete.js?
id=1&user_name=mickeymouse&user_password=g9h8i7j
```

JSON Response Example

```
{message:{status:OK,code:1}}
```

XML Request Example

```
<message>
  <status>OK</status>
  <code>1</code>
</message>
```

APPENDIX B

Proposed Schemas

address_books		
An address book record holds data of a person or company. **Associated Table(s)**: *people*, *contacts*		
id	int	**primary key**
person_id	int	The owner of this address book. foreign key => people.id
first_name	string	
last_name	string	
company	string	
created_at	datetime	
updated_at	datetime	

contacts		
Contact data that is bound to an address book record. **Associated Table(s)**: *address_books*		
id	int	**primary key**
address_book_id	int	foreign key => address_books.id
destination_address	string	Example of inputs: - h323:12.34.56.78:1720 - aim:janedoe1970 - sip:janedoe1970@sip.trs.com
destination_label	string	Example of inputs: - home - work - mobile
index	int	The order this contact to be displayed in the list. A value of 1 should be topmost.
is_favorite	bit	An enabled favorite would allow it to appear in the speed dial list or however the developer prefers to handle this.
light_flash_type	string	Input to instruct the device on how a light flasher should behave when receiving incoming calls from this contact.
created_at	datetime	
updated_at	datetime	

call_histories		
Call history **Associated Table(s)**: *none*		
id	int	**primary key**
phone_number	string	The caller id as it came in or dialed.
is_inbound	bit	Determines whether this is an inbound (true) or outbound (false) call.
is_missed	bit	Determines whether this is a missed call or not.
called_at	datetime	